ABSTRACT OF THE DISCLOSURE

The dielectric constants of SiC and SiCN that are currently the subjects of much investigation are both 4.5 to 5 or so and that of SiOC, 2.8 to 3.0 or so. With further miniaturization of the interconnection size and the spacing of interconnections brought about by the reduction in device size, there have arisen strong demands that dielectric constants should be further reduced.

Furthermore, because the etching selection ratio of SiOC to SiCN as well as that of SiOC to SiC are small, if SiCN or SiC is used as the etching stopper film, the surface of the metal interconnection layer may be oxidized at the time of photoresist removal, which gives rise to a problem of high contact resistance.

The present invention relates to an organic film made of one of SiOCH, SiCHN and SiCH that is formed using, as a source, a polyorganosilane whose C/Si ratio is at least 5 or greater and molecular weight is 100 or greater, and a semiconductor device wherein such an organic insulating film is used, and more particularly to a semiconductor device having a trench structure.